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CASE REPORT

Difficulties diagnosing spinal subdural hemorrhage in a hypo-coagulated patient due to simultaneous symptomatic subdural cranial hemorrhage

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Abstract A hypo-coagulated 58-year-old female complained of headaches right after being exposed to the first pressure waves generated during an exhibition of fireworks. The day after she presented with seizures and the CT scan showed subdural hemorrhage over the left frontoparietal sulci. Eight hours after admission she disclosed left lower limb hypo-esthesia, i.e. a finding not attributable to the cranial hemorrhage. Four hours later sphincter dysfunction and paraparesis were also present with a left predominance. This was due to a T12–L1 subdural extramedullary hemorrhage. The patient was operated and showed a favorable outcome. Hypo-coagulated patients with cranial hemorrhage require prolonged surveillance and may harbor spinal hemorrhage as well. This rare combination can be unsuspected in view of the evident cranial event, and may cause severe neurological deficits if not detected.

Keywords Subdural · Hemorrhage · Cranial · Spinal · Hypo-coagulation · Diagnosis · Surgery

Introduction

Hypo-coagulated patients are prone to develop spontaneous or traumatic hemorrhagic lesions. These lesions can be multiple, may not be clinically apparent at an early stage, and can occur in unexpected locations as well.

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Case report

A 58-year-old female on oral anticoagulants due to atrial fibrillation attended a local festivity to see fireworks. During the exhibition she complained of a headache of sudden appearance right after being exposed to the first pressure waves so generated. The headache persisted and was accompanied by nausea. She categorically related the onset of the symptoms to the strong pressure waves caused by the explosions and she denied other forms of trauma. The day after she had partial motor seizures on the right side and sought medical care. On admission she was alert and oriented, complained of headache, and no motor deficits were recorded. CT scan disclosed subdural hemorrhage over the cerebral sulci on the left frontoparietal convexity (Fig. 1a). Her INR was 3.8. She was given 2 mg of vitamin K, valproic acid and analgesics. Eight hours later she complained of numbness on the left lower limb; on examination motor strength remained normal but very mild hypo-esthesia in the left lower limb was suspected. Four hours after this, she noticed weakness in the lower limbs predominantly on the left side with a rapid progression. Examination disclosed paraparesis, grade 2 on the left and grade 3 on the right. Hypo-esthesia below T12 was present. A Foley catheter was inserted and confirmed urinary retention. Urgent spine MRI disclosed a hematoma at T12–L1 that compressed the spinal cord and adjacent roots (Fig. 1b–d). She was given plasma and taken to the operating room. A laminectomy was performed. The dural sac was tense. A subdural extramedullary hematoma was found. It had a liquid component that was promptly evacuated after dural opening and a more organized portion adherent to the spinal cord was partially removed. The postoperative course was uneventful and she went to rehab. Six months after she had independent gait and sphincters

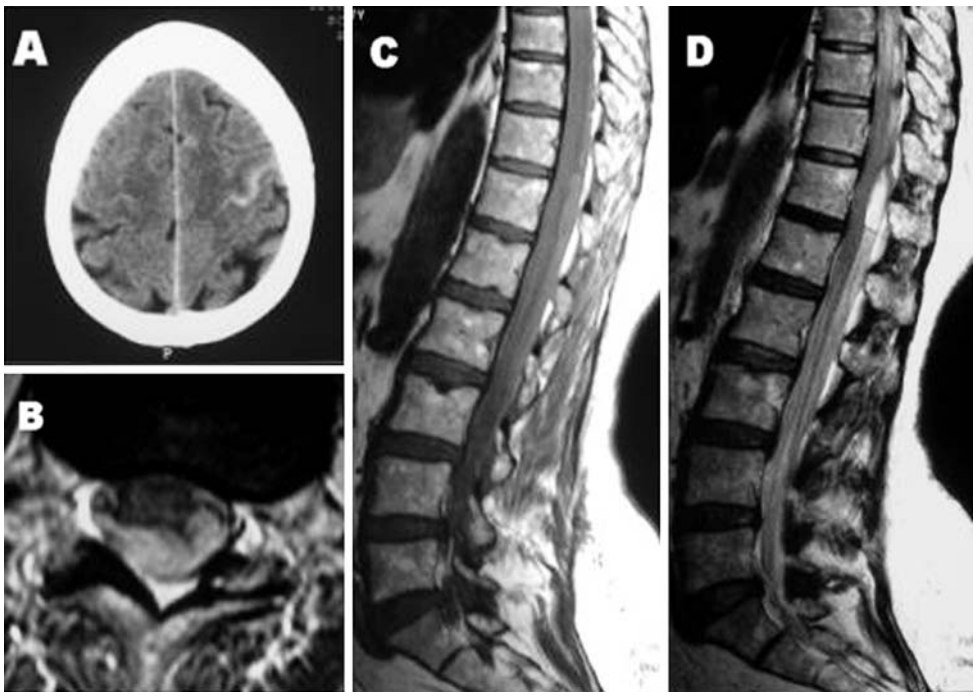

Fig. 1 **a** Transverse head CT image. Subdural hemorrhage over the cerebral sulci on the left frontoparietal convexity. **b** Transverse, **c** sagittal T1 weighted and **d** sagittal T2 weighted spine MR images. Subdural extramedullary hemorrhage at T12–L1

were functional; very slight proximal left lower limb paresis as well as mild hypo-esthesia below T12 persisted.

Discussion

Simultaneous acute cranial and spinal subdural hemorrhage is a rare occurrence. A recent review has found five other cases [2]. Separate spinal and cranial sources of subdural hemorrhage are possible. Nevertheless, a cranial origin of the spinal component has been debated since the spinal subdural space lacks bridging veins. Use of anticoagulants can be associated with an aggravation of the initial hemorrhagic lesions due to impaired hemostasis and severe late hemorrhagic complications may follow an initially trivial injury. Hypo-coagulated patients with cranial hemorrhage require prolonged surveillance [1]. The present case serves to illustrate that in addition to the cranial hemorrhage, they may harbor spinal hemorrhage that can become manifest only at a later time. Spinal hemorrhage can be unsuspected due to the relevance attributed to the symptoms of the cranial event, and may cause severe neurological deficits if not detected. Both the cranial and the spinal hemorrhages were symptomatic and not incidental findings in this case, but paradoxically this led to diagnostic difficulties. The spinal hemorrhage was not suspected at start. Its initial clinical manifestations, i.e. mild sensory disturbances ipsilateral to the cranial hemorrhage, were somewhat misinterpreted in view of the evident symptomatic cranial event to which only contralateral symptoms and signs should have been attributed. Motor deficit in the lower limbs and sphincter dysfunction were unfortunately already present at the time of diagnosis. Nevertheless, surgical drainage of the hematoma allowed for a good recovery. Despite the clear temporal association between the onset of symptoms and the only traumatic event found, i.e. the pressure waves generated by fireworks, it seems controversial to raise the suspicion that pressure waves may possibly favor the appearance of traumatic cranial and spinal hemorrhage in the setting of hypo-coagulation. Bleeding is obviously facilitated in the context of hypo-coagulation, and several factors may account for its precipitation, including hypo-coagulation just by itself. Motor seizures may also be considered by their own nature, a form of trauma. Older people have cerebral atrophy; hence bridging veins in the subdural space have less support and are more prone to rupture. Several events and circumstances may thus be implicated in the genesis of the hemorrhages in this patient. Their presence should alert the clinician to the possibility of severe late hidden multiple hemorrhage. One's initial diagnosis should at all times be questioned when the clinical manifestations encountered do not fit that diagnosis.

Conflict of interest statement None of the authors has any potential conflict of interest.

References

1. Itshayek E, Rosenthal G, Fraifeld S, Perez-Sanchez X, Cohen JE, Spektor S (2006) Delayed posttraumatic acute subdural hematoma in elderly patients on anticoagulation. Neurosurgery 58:E851–E856. doi:10.1227/01.NEU.0000209653.82936.96

2. Yamaguchi S, Kurisu K, Arita K, Takeda M, Tani I, Araki O (2005) Simultaneous cranial and spinal subdural hematoma. Neurol Med Chir (Tokyo) 45:645–649. doi:10.2176/nmc.45.645